DOCUMENT RESUME

ED 411 360 UD 031 894

AUTHOR Parks, Amanda; Pisapia, John
TITLE Developing Exemplary Technology-Using Teachers. Research Brief #8.
INSTITUTION Metropolitan Educational Research Consortium, Richmond, VA.
PUB DATE 1994-05-00
NOTE 5p.
PUB TYPE Information Analyses (070) -- Reports - Descriptive (141)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Computer Literacy; *Computer Uses in Education; *Educational Technology; Elementary Secondary Education; Incentives; *Inservice Teacher Education; Integrated Activities; Program Descriptions; *Teacher Attitudes; *Training; Urban Schools
IDENTIFIERS Exemplary Teachers

ABSTRACT

This research brief answers questions about the in-service training of teachers to use educational technology and offers models of exemplary programs in practice. Only 5% of the teaching force can be considered exemplary technology users, and it is recognized that becoming an accomplished integrator of technology into instruction is a complex and time-consuming process. Successful integration does seem to be related to training. Teachers need formal training in basic operation of computers, integration of software into existing lessons, integration of technology-based instruction into curricula, classroom management activities that allow computer use in school, and other aspects of educational technology. They need administrative and technical support as they learn about computers. Training should be easy, continuous, practical, and accessible in a three-tier approach that begins with learning to operate the computer, moves through learning to integrate the technology into the curriculum and classroom, and then involves annual skill updates. Model training programs from the following sites, several of which are urban, are described: (1) Monterey Unified School District (California); (2) Webster Elementary School, St. Augustine (Florida); (3) Calcasieu Parish Schools, Lake Charles (Louisiana); (4) Northshore School District, Bothell (Washington); (5) Chesterfield County School Division (Virginia). The Chesterfield County program consists of a three-level teacher training program that provides stipends for teachers who instruct other teachers. (SLD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

Research Brief #8

MERC

May 1994

DEVELOPING EXEMPLARY TECHNOLOGY-USING TEACHERS

ED 411 360

Most educators agree that any plan to make greater classroom use of technology must include teacher training. In fact, many believe training to be second only to funding in importance to the successful use of learning technologies in classrooms. This research brief answers questions concerning in-service training and offers models of exemplary programs in practice.

What are the characteristics of exemplary technology-using teachers?

For the majority of teachers, integration of technology into teaching remains a practice at the cutting edge. Only five percent of the teaching force are considered exemplary technology-users; meaning they have integrated technology into everyday practice. Becoming an accomplished integrator of technology is a complex process, taking up to five or six years.

Age and gender seem to have little or no significant correlation with becoming an accomplished integrator. Successful integration does, however, seem to be related to training. For example, most exemplary technology-using teachers have formal training in the use of technologies and how to integrate software into existing lessons. More importantly, they have developed an understanding of how to 1) organize class activities to allow for computer use during class time, 2) write computer programs, 3) use word processing programs, and 4) use other technological applications.

In addition to taking advantage of training opportunities, these technology-using teachers spend personal time working on computers. They place considerable value on one-on-one training (which often comes from a colleague). This devotion enables them to progress from applications that directly reinforce what is being taught (such as drill and practice) to those that are more expansive (such as tools).

Why is training important to successful integration?

Effective instruction is the critical element in any successful classroom. Technology intensive classrooms are no different. Teachers are the primary agents in the process of integrating technology. They are also the primary users, while students are the secondary users of technology in schools. One can safely conclude that there is a consistent relationship between exemplary technology use and substantial investment in supporting and training personnel. Simply put, training works!

What barriers impede integration?

Lack of adequate training is the number one impediment. Less than one third of the teaching force has as much as 10 hours of computer training, much of it focused on learning about computers rather than learning how to **apply** technology in their classrooms. Other factors include inadequate amounts of hardware and time to plan and carry out computer-based lessons.

What conditions facilitate successful integration?

Three factors stand out as major contributors to becoming an accomplished integrator: 1) motivation and commitment to student learning, and their development as teachers, 2) support and collegiality teachers experience from their school through on-site help and peer training, and 3) access to technology in sufficient quantities.

Requirements necessary for effective use of computers include adequate hardware, appropriate software, related courseware, skilled teachers, reasonable mechanisms to learn and practice, technical assistance, and supportive environments for professional growth and development.

What types of training are needed?

Teachers need formal training in the following: basic operation, integration of software into existing lessons, integration of technology-based instruction into curricula, classroom management activities which allow use during class time, peripherals, programming, selection, modification and evaluation of courseware, instructional and non-instructional uses of computers, matching of courseware with student abilities and learning styles, selection of hardware, development of user networks, and copyright protection issues.

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Gwen Hupp
MERC

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

ED031894

BEST COPY AVAILABLE

What kinds of support structures do teachers need to integrate technology into their classrooms?

School Division support systems should include the following areas:

Administrative support - Teachers need administrators who understand that even adequate use of technology is a complex process, one which requires changes in curricular planning, physical setting, classroom management, security, and scheduling (especially with laboratories).

Consultation support - Teachers need consultants for encouragement as much as for trouble-shooting. For instance, exemplary technology-using teachers were forty percent more likely to have begun using computers initially at the suggestion of a technology coordinator rather than by their own initiative or from administrative directives.

Personal networking - Networking is a powerful influence. Technology-using teachers are more often found in schools with high technology usage. Exemplary teachers can often encourage novices better than formal training can. Such productive social networks must be encouraged.

Technical literacy - Achieving technical literacy is the first stage of training. Teachers need technical training on the use of the hardware and how to use basic applications such as a word processors, graphics programs, spreadsheets, hypertext programs, etc. They also need integrative training in how specific applications can be merged into on-going curricular activities. Finally, they need to see the possibilities of applications for student learning and for their own administrative duties.

Incentives - Research shows that teachers value the following incentives: release time, salary credits, and home access to a personal computer. However, seeing their students using these tools effectively is the key incentive for exemplary technology-using teachers.

Tuition support - Teachers need stipends for summer training and release time to attend training sessions. There is a strong bias against weekend and after school training sessions.

How should training be staged?

Training needs to be easy, continuous, practical, and accessible. Exemplary technology-using teachers recommend that training start with one application that is easily used and quickly adopted. It is best to build training programs into practical settings. Also, teacher and staff representation in the planning stages ensures that training will be tailored to classroom needs.

The following three-tier approach to training is recommended, where adequate time for practice and access to the technologies remain constant throughout the process:

Tier 1: Primary training involves learning to operate the technology.

Tier 2: Tier two training involves learning to integrate technology into the curriculum, managing a technology intensive classroom, and developing curricula based on available resources. At this level, teachers need education that provides vision and understanding of state-of-the-art development and application.

Tier 3: Tier three training involves annual skill updates which allow for new developments and provide a vision of what their classroom can become. Encouragement and support for experimentation and innovation help motivate the learning process.

What seems to be the best way to schedule training?

Informal, one-on-one training from a lead teacher or media specialist provides the vast majority of technology training and the most valued by teachers. It is possible to cluster some training to meet common needs, but teachers may still require individual follow-up.

Flexibility is important. Time should be scheduled for teachers to observe each other and experiment with the technology available. Additionally, even though it is costly, having one individual available (preferably on-site) to listen to concerns of teachers and staff and to act as a trouble-shooter for diagnostics and problem-solving, can be especially valuable when teachers become frustrated with problems as they surface.

Are there model training programs we can emulate?

Yes, there are several impressive programs in place which merit replication, with or without adaptations. Below are only a few of the numerous sites across the country worthy of consideration.

Monterey Unified School District, Monterey, California

Monterey utilizes teacher advisory and management teams to help in all stages of integration (floorplan, installation, etc.). They offer the following guidelines to develop training opportunities:

- define objectives, review often
- have teachers build training teams
- create realistic classroom/office environment for training
- build training into practical settings (i.e., on site or close-by)
- assemble training kit and/or portable training cart
- prepare emergency supplies kit
- continually assess the needs of trainees
- use your recommendations!

A key feature in Monterey is their **SuperSub** program which enlists early retirees as substitutes for teachers. The participating teachers work with the SuperSub to determine content and pacing of training over a fixed, yearlong calendar. These retirees create their own sequence of technology lesson plans across the curriculum and bring their own support materials. The SuperSub arrives with prepared (though optional) lesson plans. This relieves the teacher from designing lessons and providing materials a time consuming process. One individual serves as a permanent SuperSub in each school cluster.

Webster Elementary School, St. Augustine, Florida

Webster serves as a demonstration, research, and training site and features one-on-one training. They use **Teacher Experts**, who are accomplished integrators who volunteer to participate in in-depth training and later conduct a variety of workshops for other staff members. Webster has a teacher expert for all facets of technology including integrated learning labs, copyright, and various software applications.

Calcasieu Parish Schools, Lake Charles, Louisiana

Calcasieu Parish Schools established a district **Tech Center** with a staff of five trainers and two repair personnel. They offer training on IBM, Apple, Macintosh, CD-ROM, video production editing, laser printers and scanners. A satellite dish permits educational teleconferences to be downlinked and/or recorded in the Tech Center. Through an on-line computer, teachers select from a library of over 100 current periodicals. The Video Encyclopedia of the Twentieth Century, with 79 hours of primary source material, is also available. The Center remains open until 7 pm three days a week, until 4 pm two days a week, and from 9 am to noon on Saturdays.

Northshore School District, Bothell, Washington

Northshore's program focuses on activities which encourage staff to adopt technological applications to fit specific needs. Teachers have access to the **Technology Resource Center** where personnel can use, examine, experiment with, and receive advice on emerging applications.

Northshore's staff development policy provides many support structures:

- flexible and adequate time for training
- adequate access to technology
- emphasis on practical training
- training which addresses variety of existing skill levels
- instruction which emphasizes teaching with technology
- on-going instruction and support after initial training
- support of supervising personnel
- a classroom of the future demonstrating different technology use
- special-production technology in each school.

Chesterfield Co. School Division, Chesterfield, Virginia

Chesterfield initiated a five-year **Technology Professional Development Plan**. Over the five-year period, all teachers, administrators, and specialists must obtain a specified minimum of technology training. Training will be provided by either the computer coordinator or another interested teacher who will be paid a stipend of $1500. This plan provides training on the following three levels of skill development.

Level 1: The Experimenter. The Experimenter level is designed to introduce educators to the use of technology as an instructional and productivity tool. The goal is to provide an environment whereby educators can gain hands-on experience with various software packages and develop a comfort level to experiment with programs that could be incorporated into their curriculum.

Teacher/Staff Checklist:

- I use the skill of keyboarding.
- I am familiar with various terminology relating to technology.
- I understand component parts and the working environment of the computer (networking).
- I am beginning to use the skill of word processing and

can format a disk and save information which I have typed.

- I have an awareness and understanding of software related to my content/teaching area.
- I have a basic knowledge of peripherals and how to connect, and am beginning to use computers as a productivity tool (banners, cards, bulletin board ideas).
- I have an awareness of the creative uses of computers with music, art, student productions, etc.
- I am beginning to use telecomputing such as VAPen.
- I have an awareness of the technology available in my school.
- I understand copyright as related to computer software and am committed to following county guidelines in its ethical use.

Level 2: The Challenger. The Challenger level is designed to offer educators an opportunity to expand their expertise using technology skills. Educators recognize good software and make appropriate selections to achieve curricular objectives, and to improve and enhance instruction. This allows students to make decisions regarding the use of technology for their learning. The goal is the integration of content software as a tool for developing higher level thinking skills.

Teacher/Staff Checklist:

- I use the computer regularly as a productivity tool (word processing, databases, spreadsheets, gradekeeping).
- I frequently use content or discovery software with students (writing, LOGO, analyzing data).
- I am expanding my knowledge of multimedia possibilities and utilizing them in the curriculum with students (videodiscs, camcorders, CD-ROMs).
- I am using telecomputing projects with students.
- I am able to evaluate and choose software that is appropriate for the content level of my students.
- I understand the concept of a hard drive and its usage (saving, deleting, moving files, installing a program).
- I take an active part in working with other educators to maximize the utilization of equipment and to plan for the expansion of technology in my school.

Level 3: The Innovator. The Innovator level is designed for those educators who have met the challenge of integrating technology into their curriculum area and are now moving towards a new learning environment with their students. Educators, recognized as master leaders in empowering students and other educators through the use of technology integration, are actively using technology throughout the course of each day. The focus is to facilitate the move from teacher-centered to student-centered instruction with shared learning as the goal, making efforts to share innovative ideas across the country.

Teacher/Staff Checklist:

- I am extensively integrating technology into the curriculum providing students the opportunity for unique and exciting educational experiences.
- I am moving to a facilitator role learning with my students in a multi-media environment.
- My students are utilizing technology in research, in the development of papers utilizing desktop publishing materials, and/or multimedia presentations.
- Through telecomputing projects my students are making meaningful connections and developing an understanding of global issues.
- I am utilizing research skills in technology for classroom evaluation and developing skills for students.
- I am using interactive programming tools to develop and share curriculum materials (HyperStudio, HyperCard, LinkWay).
- I am a leader in working with other educators to maximize the utilization of equipment and to plan for the expansion of technology in my school following county guidelines in its ethical use.

Amanda Parks

John Pisapia

Phone: 804/828-1332
FAX: 804/828-0479
Internet: JPISAPIA@CABELL.VCU.EDU

Answers found in this research brief have been synthesized from the MERC publications listed below. To obtain a copy, please contact the MERC office.

Pisapia, J., Schlesinger, J., & Parks, A. (1993, February). Learning technologies in the classroom: Review of the literature. 213 pp. ($10.00)

Pisapia, J. (1993, April). Learning technologies in the classroom: Case studies of technology intensive schools. 64 pp. ($8.50)